



## CA Cloud Overview

Benefits of the Hyper-V Cloud

For more information, please contact:

Email: [sales@canadianwebhosting.com](mailto:sales@canadianwebhosting.com)

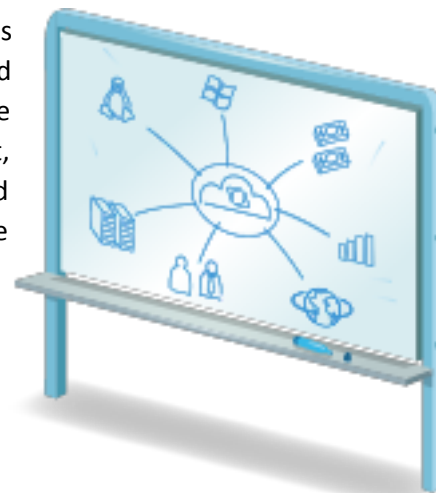
Ph: 888-821-7888





## CA Cloud Overview

Canadian Web Hosting's on-demand CA Cloud solution gives customers the ability to allocate resources as you need them, and customize a solution that is designed to significantly improve uptime and reliability. Our CA Cloud platform is a multi-cloud, multi-tenant, multi-hypervisor software system that enables cloud deployment and comprehensive management for end-users. We offer enterprise grade hardware, automatic-healing technologies and store your data on a redundant enterprise storage devices using RAID 50 and RAID 10. The hypervisors that host the servers are connected to the centralized network attached storage via high-speed links to avoid any bottlenecks and ensure high performance for I/O operations.



What this means is that when you combine the CA Cloud, with Canadian Web Hosting's proven expertise and partner certifications with Microsoft, Citrix and VMware; clients will get the following benefits with every plan:

- 50 to 70% savings when compared to other cloud solutions
- Rapid setup, with the ability to be up and running in minutes
- Instant scalability with the ability to add more servers in minutes
- Robust security with a hypervisor layer that insulates your environment
- Industry best hardware with the fastest servers available
- Enterprise grade firewalls that delivers fully managed protection
- Daily server snapshots protects your data
- 24/7 server monitoring and support
- Greater than 99.99% uptime ensures that your site is online
- SSAE 16 Type II SOC 1 Certification
- Safe Harbor Compliant

## Cloud Deployment Models

One of the unique advantages of the CA Cloud platform with Microsoft's Hyper-V is the ability to support deployment of multiple cloud hosting models by leveraging advanced hardware virtualization/paravirtualization architecture that enables support of:

- Public clouds
- Private clouds
- Hybrid clouds (dedicated servers with cloud failover)
- VPS clouds (node-based)



## Cost Savings Factors

The question of outsourcing your server infrastructure can be a daunting challenge for many organizations, and when looking at virtualization it adds some uncertainty that can present a roadblock to future savings. The goal of our CA Cloud services is to provide enterprise-grade reliability, efficiency and security that when combined create an avenue that allow you to significantly lower your footprint and cut operating costs. Today, most companies spend about 60 percent of their IT budgets on infrastructure and operations and by engaging the CA Cloud and consolidating your current infrastructure you can expect an annual savings of 25 to 40% annually.

**Consolidation:** The physical aspects of your IT infrastructure—server hardware, storage, network connectivity and power consumption—all cost money. The CA Cloud lets you deliver more with less and through server consolidation studies have shown an annual savings of 15 to 20 percent per year. You are able to drive cost savings by reducing equipment costs, reduced energy usage, system software licenses, warranty services, as well as consolidating workloads; each of which previously required its own server hardware, into virtual machines (VMs) running on fewer physical machines. You eliminate the need to purchase, manage, maintain and power those machines, and focus instead on running the VMs themselves. The fewer machines you have, the less money it costs.

**Scalability:** Planning for peak workloads is one of the most common causes of maintaining greater capacity than you'd normally require. Again, this traditionally means more hardware, software and other resources. For example, if you run a seasonal application, you'll need to plan for a spike in transaction traffic over that season. You may spend the rest of the year maintaining unused capacity, just to be ready for the occasional spike. Moving your infrastructure and applications onto the CA Cloud lets you quickly add and allocate additional capacity when you need it—and you won't have to maintain it year-round.

**Reliability:** Whether caused by a hardware failure, human error or a power outage, downtime costs money. CA Cloud virtual servers are contained entirely as a software object, so you can easily and seamlessly migrate them to other physical hardware whenever necessary. Features like Live Migration (for more information about Live Migration, see page 9). In addition, with increased uptime you are also able to decrease the internal IT support required to run and maintain your servers.

**Agility:** The CA Cloud brings an unparalleled level of agility and flexibility. You can manage and maintain servers as discrete software components, rapidly create new servers from pre-defined and configured images, and reallocate resources to optimize performance and stability including Dynamic Memory. You increase the efficiency of your IT resources and, most importantly, your time. As an example, by simply automating staff processes that currently exist companies can expect an annual savings of 6 percent including improved business and process efficiencies with fewer errors.

### CA Cloud Overview

**Proprietary and Confidential:** Not to be duplicated, used or disclosed – in whole or in part – for any purpose other than to evaluate this information



## CA Cloud Hardware Architecture

CA Cloud Servers are designed to optimize cloud scalability, resilience, ease of use and ease of maintenance for our customers. We built our CA Cloud system using Dell hardware with virtualization that includes Hyper-V to drive maximum efficiency by:

- Optimizing the infrastructure for exceptional virtualization performance and energy economy to run client business-critical applications.
- Tightly integrated solution that is easily deployed and managed, thereby allowing us to respond to customer needs faster.
- A virtualization environment built on a trusted hypervisor and enterprise grade hardware layer.

Our cloud infrastructure utilizes the following components exclusively for the CA Cloud, which is built around our SSAE 16 (type 2, formerly SAS70 Type II) and CSAE 3416 (type 2) certifications including our Tier III datacentres that use only Tier 1 bandwidth guarantying a 100% Network SLA. Our 100% redundant hardware infrastructure includes:

- Dell R610 PowerEdge Servers
- Dell Equallogic PS6500, PS6010XV SANs
- Dell PowerConnect 8024F Managed Switches
- Windows Server 2008 Data Centre with Hyper-V
- Microsoft Hyper-V Management Console



**PowerEdge™  
Virtualization-Optimized  
Servers**

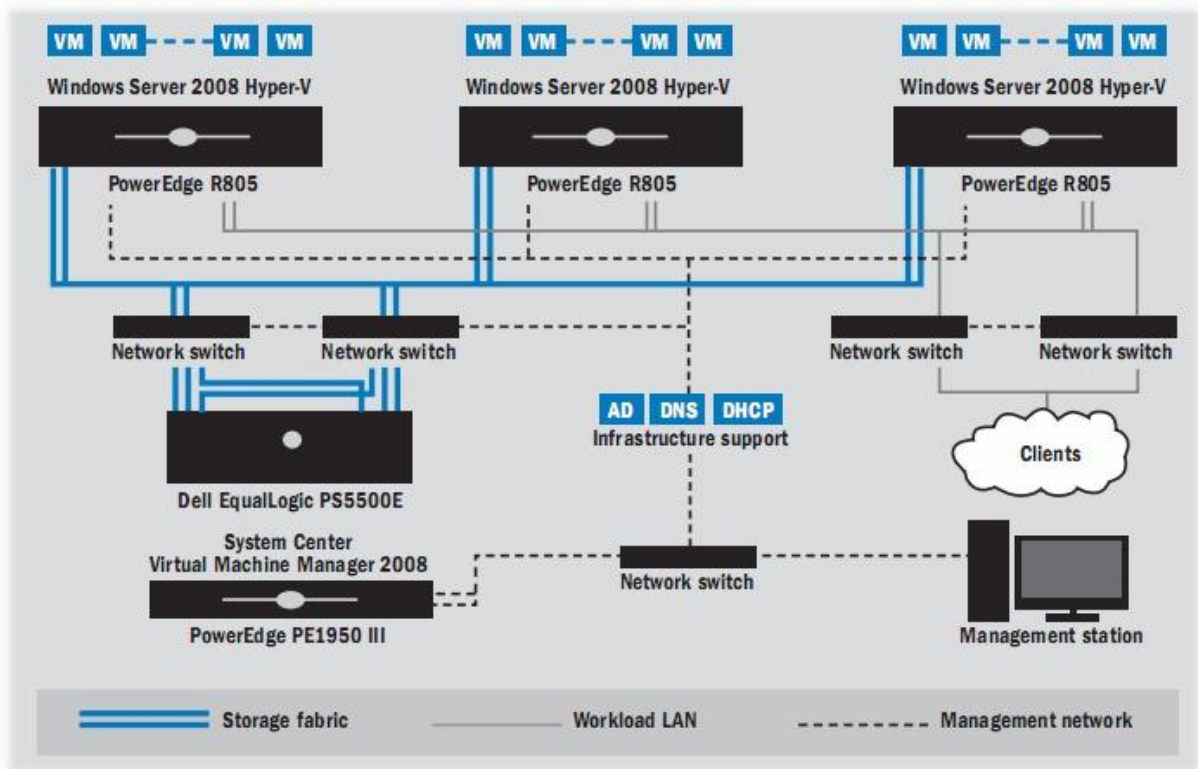


**EqualLogic™ PS Series  
Virtualized iSCSI SANs**



## Physical Layout

The CA Cloud is a true cloud system that can self-heal and utilizes automatic failover; multi-hypervisor support; dynamic resource allocation; and multi-layered security. Described below is a basic high-level layout of the CA Cloud hardware configuration.



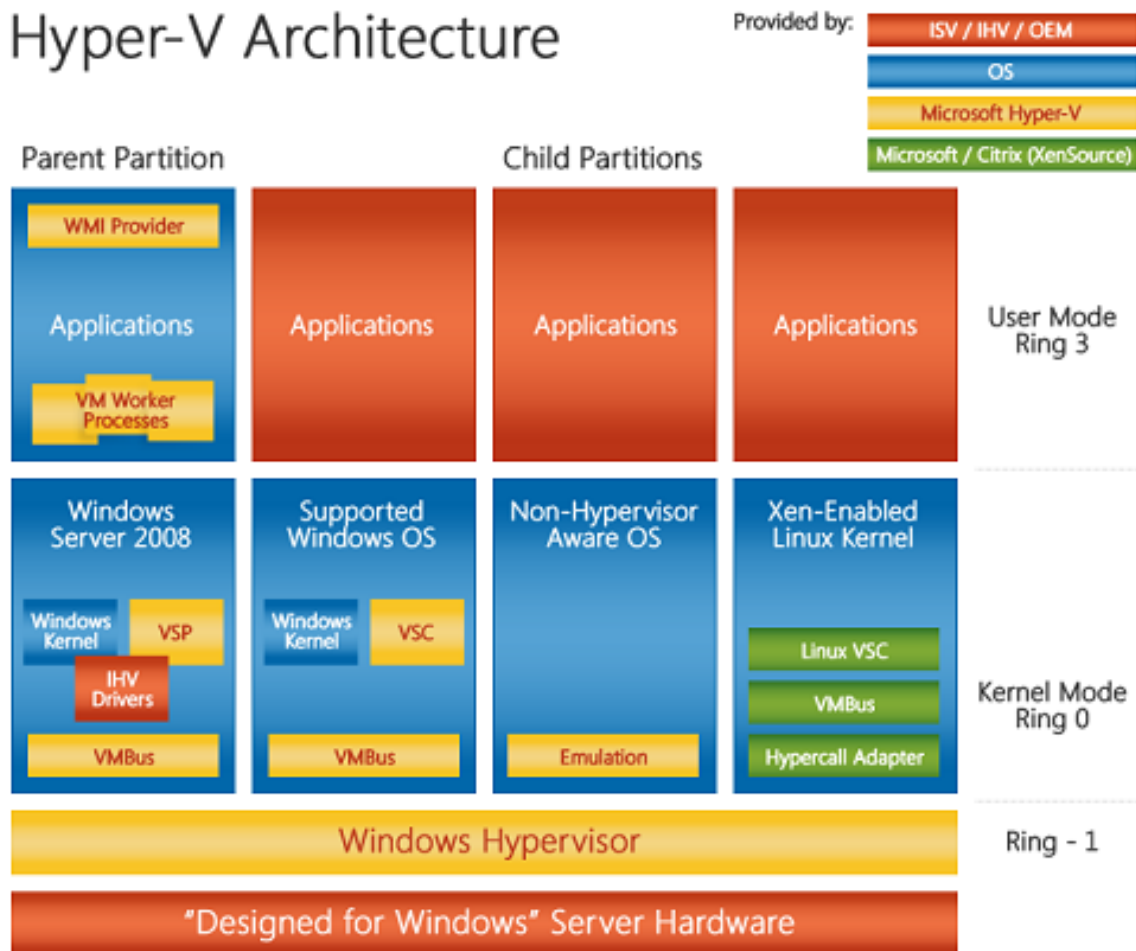
## CA Cloud Overview

Proprietary and Confidential: Not to be duplicated, used or disclosed – in whole or in part – for any purpose other than to evaluate this information



## Virtual Layout

When you combine the physical hardware with Microsoft Server and Microsoft Windows Server, you get a full suite of services and a true cloud system including self-healing technologies, live migration, true high availability, multi-hypervisor support; dynamic resource allocation; and multi-layered security. Listed below is a layout of the virtualization architecture utilized by the CA Cloud and Microsoft Server with Hyper-V.



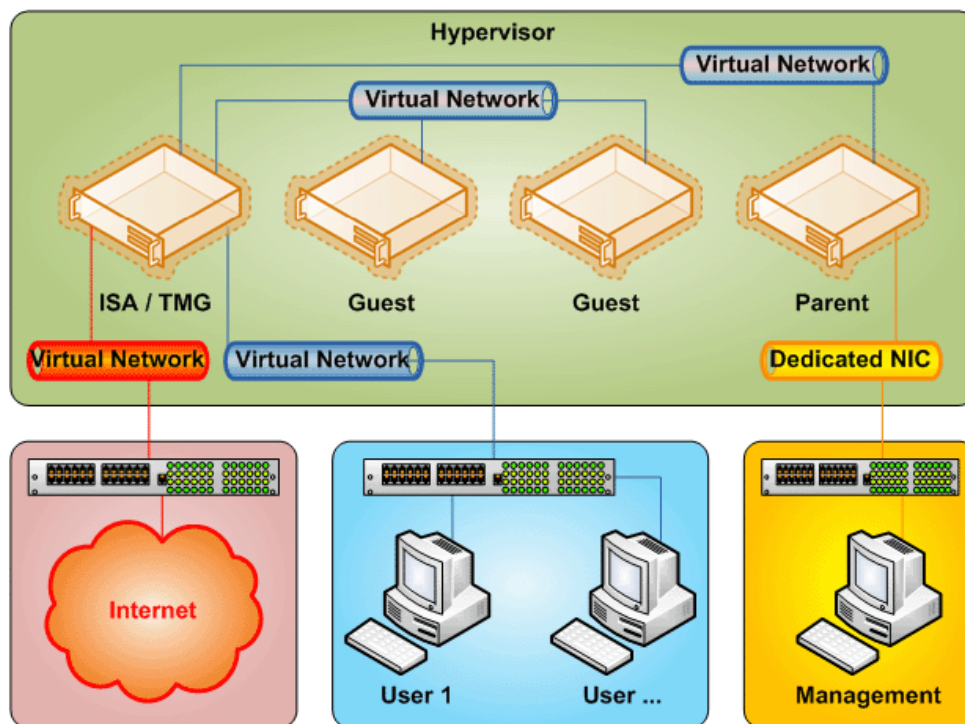


## Features and Benefits

One of the primary goals we had in creating a 100% Canadian cloud solution was to help our clients quickly realize a return on investment without sacrificing productivity or security of their data. Unlike many competing products, the CA Cloud is 100% Canadian –owned and –operated, thereby giving our customers the benefits of the cloud without having your data to ever leave Canada. When combined, our solution (people, process and technology) deliver predictable outcomes for our clients and address real business issues. When engaged, here are some the cost savings our clients receive over the short- and long-term.

## Security

Our security is more than just a statement; it's a combination of industry leading infrastructure, hardware, software and procedures. With Hyper-V Cloud Servers, we can ensure complete isolation of resources between virtual environments resulting in the most robust virtualization solution for your applications. Our solution integrates a firewall engine that includes service-oriented to restrict access to specific services by IP and subnet. The CA Cloud Hyper-V deployments follow a similar setup as demonstrated below.





We achieve this through use Microsoft's Authorization Manager, and Role-Based Access Control that allows us to secure the virtual machines, configuration files and data. Our security policies are based on Microsoft's Hyper-V Security Guide that focuses on three primary areas:

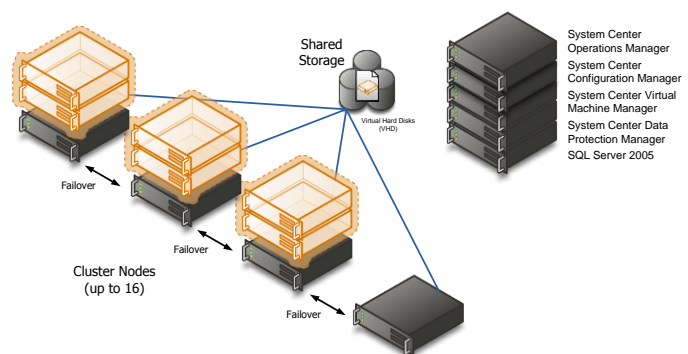
- **Hardening Hyper-V:** each installation of Hyper-V is focused on security and includes measures to reduce the attack surface of any server running Hyper-V and advanced configuration of network and storage devices to limit access.
- **Delegating Virtual Machine Management:** each setup follows a strict delegation protocol so that virtual machine administrators only have the minimum permissions required through the use of Microsoft's Authorization Manager (AzMan) and System Center Machine Manager (VMM 2008)
- **Protecting Virtual Machines:** Each installation includes restrictive protocols that limit file system permissions, encryption, and auditing including hardening and updating each operating system instance running on the virtual machine.

In addition, our network utilizes some of the most advanced technologies available in the marketplace today including anti-spoof and anti-sniff firewalls, and our Tipping Point Intrusion Prevention System that prevent outsiders from getting in.

## High Availability and Failover

A significant advantage to using Hyper-V as the virtualization layer is that Failover clustering has been a component of Microsoft Windows server products for many years and Microsoft has a proven track record with these technologies. With Hyper-V, we have integrated failover clustering as part of the CA Cloud high-availability strategy for your virtualized infrastructure. The CA Cloud failover cluster consists of multiple servers (nodes) that are connected through multiple network links, one of which enables monitoring the status of each node. The nodes monitor each other using a network heartbeat to determine if nodes are responsive. If a node becomes unresponsive, your application or website running on the failed cluster node will be restarted on another cluster node after it has taken ownership of resources.

In the months ahead, our CA Cloud will integrate geographically-dispersed (or stretch) clusters that can also be implemented without requiring custom or specialized hardware. This provides you with the ability to implement a failover cluster that can manage unplanned downtime by failing over to another local node in the case of a single server failure, or to a node in another geographical region in the event of a more



## CA Cloud Overview

**Proprietary and Confidential:** Not to be duplicated, used or disclosed – in whole or in part – for any purpose other than to evaluate this information





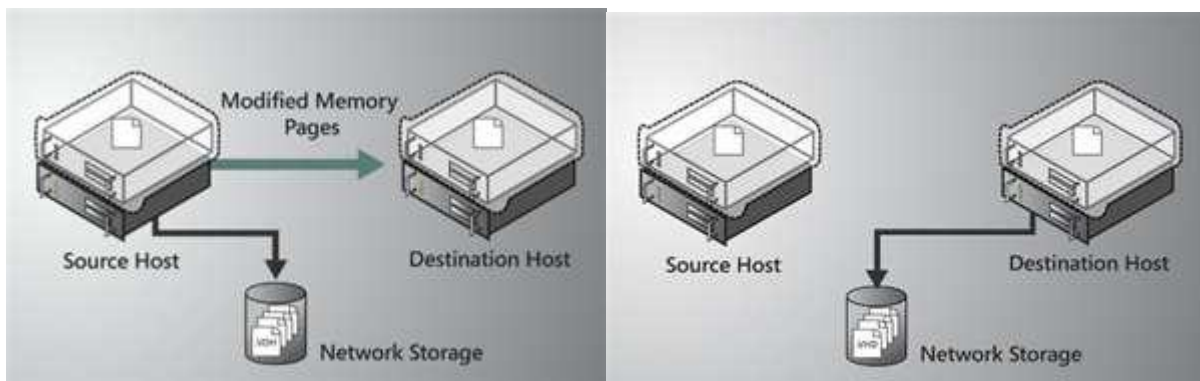
severe local disruption such as might be caused by an extended power outage, natural disaster, or other large-scale problem.

## Live Migration

One of the biggest additions to Hyper-V is the Live Migration capability. With Hyper-V™ Live Migration, we can move running VMs from one physical host to another without any disruption of service or perceived downtime. It achieves this by moving running VMs with no impact on VM availability to customer end-users. A live migration is deterministic, meaning that our administrators that initiate the live migration control which server node is the destination for the live migration. The guest operating system of the migrating VM is unaware the migration is happening, so no special configurations are needed. Since Hyper-V live migration can move running virtual machines without downtime; it will facilitate greater flexibility and value:

- With multiple CA Cloud Hyper-V physical hosts, we are able to move running VMs to the best physical computer for performance, scaling, or optimal consolidation without impacting users.
- With multiple Hyper-V™ physical, we are able to service our systems in a more controlled fashion, scheduling maintenance during regular business hours.

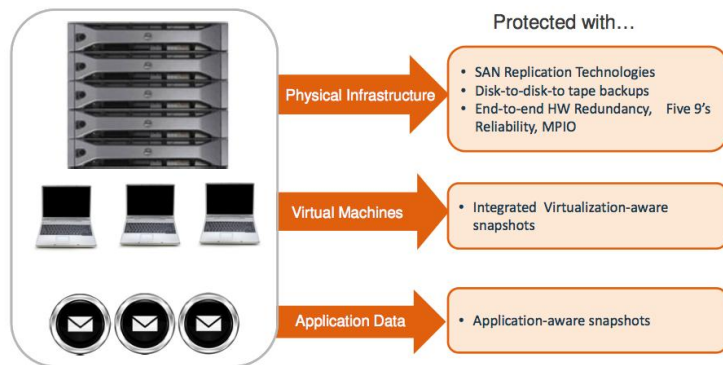
Described below is a sample “Live Migration” process that would occur when we move virtual machine from the source host over to the destination host.





## Protect Critical Data

For the first time ever, customers have access to a web hosting cloud with enterprise-class resilience including self-healing architecture that ensures your site is online - all the time. Using integrated Dell backup technology, a disk-based backup and recovery solution. We are able to decrease downtime and



improve reliability with enhanced business continuity and disaster recovery methodologies. Backups are encapsulated to include OS, backups, applications and data that all fall within your Recovery Time Objectives. Demonstrated below is an overview of the backup process.

## Disaster Recover and Business Continuity

A key component of business continuity. Natural disasters, malicious attacks, and even simple configuration problems like software conflicts can cripple services and applications until administrators resolve the problems and restore any backed up data. Leveraging the CA Cloud clustering capabilities with Windows Server 2008, Hyper-V supports disaster recovery (DR) within IT environments and across data centers, using geographically dispersed clustering capabilities. Combined with that, Hyper-V utilizes business continuity features such as live backup and quick migration that enables more stringent uptime and response metrics.

## Dynamic Memory

Combined with our CA Cloud, Windows Server 2008 R2 with SP1 with Dynamic Memory enables our customers to better utilize the memory resources of Hyper-V hosts by balancing how memory is distributed between running virtual machines. Memory can be dynamically reallocated between different virtual machines in response to the changing workloads of these machines. Dynamic Memory enables more efficient use of memory while maintaining consistent workload performance and scalability.

## Real-Time Provisioning and Scalability

Reaching your maximum capacity in a typical dedicated server can result in downtime with a painful maintenance window as you upgrade your server, and/or migrate to a new machine. Through Live Migration and System Centre Virtual Machine Manager (SVCMM), we can move your entire running virtual machine instantly from one server to another with zero downtime, and we also have tools that give us the ability to customize the amount of CPU, memory or disk utilization with the click of a button.

### CA Cloud Overview

**Proprietary and Confidential:** Not to be duplicated, used or disclosed – in whole or in part – for any purpose other than to evaluate this information



## SSAE 16 Type II SOC 1 Certified

Canadian Web Hosting is SSAE 16 Type II SOC 1 and CSAE 3416 Type II (formerly SAS70 and CICA 5970 audit standards) certified and successfully demonstrated that our procedures and controls have been tested by an eligible 3<sup>rd</sup> party. The audits provide assurances that Canadian Web Hosting customers are in secure, reliable and effective operating environments that have the proper controls for Internet operations and highly available IT services. This includes datacentre security, customer security, data storage, access and security.



## About Canadian Web Hosting

Since 1998, Canadian Web Hosting has been delivering proven and reliable web hosting solutions that are 100% Canadian -owned and -operated. What this means, is that no matter the service, you can be assured that your data will stay in Canada. Our cloud hosting services utilize data Centre's in Toronto and Vancouver, which means that your private information never leaves Canada and meets all Canadian privacy requirements.



*Toronto (151 Front)*

151 Front Street  
Toronto, ON  
M5J 2N1, Canada



*Vancouver B.C.*

555 West Hastings Street  
Vancouver, BC  
V6B 4N5, Canada

### CA Cloud Overview

**Proprietary and Confidential:** Not to be duplicated, used or disclosed – in whole or in part – for any purpose other than to evaluate this information